

That which is claimed is:

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1. A non-lethal temporarily incapacitating formulation suitable for use in an aerosol or spray application, said lachrymator formulation comprising  
a solvent system comprising a mixture of propylene glycol esters of short chain fatty acids and glycerol tris (2-ethylhexanoate); and  
a lachrymator agent.
  2. The formulation of claim 1 wherein said propylene glycol esters of short chain fatty acids is propylene glycol dicaprylate/caprate.
  3. The formulation of claim 2 wherein said propylene glycol dicaprylate/caprate is present in an amount of 20 to about 80 % by weight of the solvent system.
  4. The formulation of claim 2 wherein said propylene glycol dicaprylate/caprate is present in an amount of 45 to about 55 % by weight of the solvent system.
  5. The formulation of claim 1 wherein said glycerol tris (2-ethylhexanoate) is present in an amount of 20 to about 80 % by weight of the solvent system.
  6. The formulation of claim 1 wherein said glycerol tris (2-ethylhexanoate) is present in an amount of 45 to about 55 % by weight of the solvent system.

7. The formulation of claim 1 wherein said solvent system comprises approximately equal amounts of propylene glycol dicaprylate/caprate and glycerol tris (2-ethylhexanoate).

8. The formulation of claim 1 wherein said incapacitating agent is an inflammatory agent. 112

9. The formulation of claim 1 wherein said incapacitating agent is selected from the group consisting of synthetic capsaicin, natural capsaicin, dibenzoxazepine (CR), chloroacetophenone (CN), ortho-chlorobenzalmalononitrile (CS), oleoresin capscium (OC), oleoresin paprika, paprika, capsicums (chili peppers), trans-8-methyl-N-vanillyl-6-nonenamide (capsaicin), 8-methyl-N-vanillyl-nonamide (dihydrocapsaicin), 7-methyl-N-vanillyl-octamide (nordihydrocapsaicin), 9-methyl-N-vanillyl-decamide (homodihydrocapsaicin), trans-9-methyl-N-vanillyl-7-decenamide (homocapsaicin), (3R, 3p, 5pR)-3,3'-dihydroxy-a',k-caroten-6'-one (capsanthin), N-vanillyl-octamide, N-vanillyl-nonamide, N-vanillyl-decanamide, N-vanillyl-undecanamide, N-vanillyl-paaiperic acid amide, and mixtures thereof. 112

10. The formulation of claim 1 wherein said incapacitating agent is present in an amount of about 0.18% to about 3% by weight of the solvent.

11. The formulation of claim 10 wherein said incapacitating agent is present in an amount of about 1.4% to about 1.5% by weight of the solvent.

12. The formulation of claim 1 further comprising a propellant.

13. The formulation of claim 12 wherein said propellant is miscible in said solvent system.

14. The formulation of claim 12 wherein said propellant is carbon dioxide.

15. An aerosol spray system comprising a propellant and a solvent wherein said solvent comprises a mixture of propylene glycol dicaprylate/caprate and glycerol tris (2-ethylhexanoate) and wherein said propellant is miscible in said solvent.

16. The aerosol spray system of claim 15 wherein said propylene glycol dicaprylate/caprate is present in the amount of 45 to about 55 % and glycerol tris (2-ethylhexanoate) is present in the amount of 45 to about 55 % of said solvent.

17. The aerosol spray system of claim 15 wherein said solvent comprises approximately equal amounts of propylene glycol dicaprylate/caprate and glycerol tris (2-ethylhexanoate).

18. The aerosol spray system of claim 15 wherein said propellant is carbon dioxide.

19. The aerosol spray system of claim 15 further comprising an active ingredient to be dispensed by said aerosol spray system.

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20. The aerosol spray system of claim 19 wherein said active ingredient is selected from the group consisting of resins, cosmetics, foods, tear gases, pepper based products, pharmaceuticals, skin care preparations, sunscreen products, antiperspirants, bath oils, food additives, automotive products, household products, industrial products, insecticides, paints, and veterinary products.

21. A non-toxic solvent useful over a wide range of operating temperatures, said solvent comprising a mixture of propylene glycol dicaprylate/caprate and glycerol tris (2-ethylhexanoate).

22. The solvent of claim 21 wherein said propylene glycol dicaprylate/caprate is present in an amount of 20 to about 80 %.

23. The solvent of claim 22 wherein said propylene glycol dicaprylate/caprate is present in an amount of 45 to about 55 %.

24. The solvent of claim 21 wherein said glycerol tris (2-ethylhexanoate) is present in an amount of 20 to about 80 %.

25. The solvent of claim 24 wherein said glycerol tris (2-ethylhexanoate) is present in an amount of 45 to about 55 %.

26. The solvent of claim 21 wherein said solvent comprises approximately equal amounts of propylene glycol dicaprylate/caprate and glycerol tris (2-ethylhexanoate).

27. A non-toxic solvent useful over a wide range of operating temperatures wherein said solvent has a molecular weight of at least 100.

28. The solvent of claim 27 wherein said molecular weight is between about 100 to about 500.

29. The solvent of claim 27 wherein said solvent has a vapor pressure of 5 mm Hg or lower.

30. The solvent of claim 29 wherein said vapor pressure is less than 1.0 mm Hg.

31. The solvent of claim 27 wherein said solvent comprises a mixture of propylene glycerol dicaprylate/caprate and glycerol tris (2-ethylhexanoate).

32. The solvent of claim 31 wherein the ratio of said propylene glycerol dicaprylate/caprate to said glycerol tris/2-ethylhexanoate is in a range from about 20:80 to 80:20.

33. The solvent of claim 32 wherein said propylene glycerol dicaprylate/caprate and said glycerol tris (2-ethylhexanoate) are present in approximately equal parts.

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